

ABSTRACT

A polarization control system includes a beam source that generates a first beam component containing light with a first polarization and a first frequency and a second beam component containing light with a second polarization and a second frequency. A polarization state modulator adjusts the polarizations of the components for transmission on a single optical fiber. A detector system measures polarizations of the components when output from the optical fiber and determines how to adjust the polarization state modulator in order to give the first and the second components the desired output polarization states. The beam source can be implemented using a Zeeman-split laser, a laser containing a birefringent element, a pair of phase-locked lasers, and/or a variety of configurations of electro-optic or acousto-optic crystals operated to create or enhance the frequency difference between the beam components.